

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1 of 12

Complete if Known

Application Number	10/591,730
Filing Date	February 26, 2007
First Named Inventor	Dong-Seok Suh
Art Unit	1724
Examiner Name	Arun S. Phasge
Attorney Docket Number	21724-003US1

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No.	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	US-	4585652	04-29-1986	Müller et al.	
	US-	5079674	01-07-1992	Francis P. Malaspina	
	US-	5429893 A	07-04-1995	George Thomas	
	US-	5518836	05-21-1996	Francis P. McCullough	
	US-	5705259	01-06-1998	Mrotek et al.	
	US-	6261469	07-17-2001	Zakhidov, et al.	
	US-	6493210	12-10-2002	Nonaka, et al.	
	US-	2003/0211637	11-13-2003	Schoeniger et al.	
	US-	6795293	09-21-2004	Timonov et al.	
	US-	7061749	06-13-2006	Liu et al.	
	US-	7167355	01-23-2007	Zheng Chen	
	US-	7541715	06-02-2009	Chiang, et al.	
	US-	7897030	03-01-2011	Suh, et al.	
	US-				
	US-				
	US-				
	US-				
	US-				

FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No.	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)			
		WO 2004/009884	01-29-2001	Rinzler, et al.	

Examiner Signature	Date Considered
--------------------	-----------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique classon designation number (optional). ² See Kind Code of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. This information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-766-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if Known

Application Number	10/591,730
Filing Date	February 26, 2007
First Named Inventor	Dong-Seok Suh
Art Unit	1724
Examiner Name	Arun S. Phasge
Attorney Docket Number	21724-003US1

Sheet	2	of	12
-------	---	----	----

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
		AREPALLI, et al; "Carbon-Nanotube-Based Electro-chemical Double-Layer Capacitor Technologies for Spaceflight Applications"; JOM, December 2005; pp. 26-31	
		FRACKOWIAK, E., et al; "Carbon Materials for the Electrochemical Storage of Energy in Capacitors"; Carbon; July 2000; pp. 937-950	
		HUGHES, M., et al; "Electrochemical Capacitance of a Nanoporous Composite of Carbon Nanotubes and Polypyrrole; Chemical Materials, Vol 14, February 2002; pp. 1610-1613	
		KHOMENKO, V., et al; "Determination of the Specific Capacitance of Conducting Polymer/Nanotubes Composite Electrodes using Different Cell Configurations; Electrochimica Acta, Vol. 50, December 2004; pp. 2489-2506	
		LEWIS, T.D.; "Interfaces are the Dominant Feature of Dielectrics at the Nanometric Level"; IEEE Transactions on Dielectrics and Electrical Insulation, Vol. 11, No. 5; October 2004; pp. 739-753	
		SUNG, et al.; "Fabrication of all-solid-state Electrochem-ical Microcapacitors"; Journal of Power Sources, Vol. 133; April 224; pp. 312-319	

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to be sent by the USPTO to previously an applicant. Confidentiality is provided by 39 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Substitute for form 1448-PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known

Application Number	10/591,730
Filing Date	February 26, 2007
First Named Inventor	Dong-Seok Suh
Art Unit	1724
Examiner Name	Arun S. Phasge
Attorney Docket Number	21724-003US1

Sheet **3** of **12**

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
		ALBERTI, G. et al., "Solid State Protonic Conductors, Present Main Applications and Future Prospects"; Solid State Ionics, Vol. 145, pp. 3-16; 12/01/2001; Elsevier Science; NL	
		ALBERTI, G. et al., "Polymeric Proton Conducting Membranes for Medium Temperature Fuel Cells (110-160°C)"; J of Membrane Sci. Vol. 185, pp. 73-81; 04/15/2001; Elsevier Science; NL	
		AN, K.H. Et al., "Electrochemical Properties of High-Power Supercapacitors Using Single-Walled Carbon Nanotube Electrodes" Advanced Functional Materials; Vol 11, pp. 387 - 392; 05/1/2001; John Wiley & Sons, Inc.; US	
		ANTONUCCI, P.L. et al., "Investigation of a direct methanol fuel cell based on a composites Nation®-silica electrolyte for high temperature operation"; Solid State Ionics Vol. 125, no month 1999; pp 431-437; Elsevier Science B.V.; Amsterdam, The Netherlands	
		ASAMITSU, A; et al., "Current switching of resistive states in magnetoresistive manganites"; Nature Vol. 388, No. 6637; 07/03/1997, pp 50-52; Nature Publishing Group; Macmillan Publishers Ltd.; US	
		BACHILLO, S.M. et al. "Narrow (n,m)-Distribution of Single-Walled Carbon Nanotubes Grown Using a Solid Supported Catalyst" JACS Communications; Vol. 125, pp. 11186-11187; 08/21/2003; Journal of the American Chemical Society, US	
		BARFIS, I.N. et al. "Increased Activation Ratio of Electro-mechanical Carbon Nanotube Actuators Using Potassium Palyth with Resistance Compensation" Journal of Smart Materials and Structures, Vol. 12, 6623/2001; pp 549-555; Institute of Physics Publishing; US	
		BAUGHMAN, R.H. "Muscles Made from Metals"; Science 300, 04/11/2003; pp 268-269; American Association for the Advancement of Science, Washington, DC; US	
		BAUGHMAN, R.H. et al. "Carbon Nanotubes - The Route Towards Applications"; Science 297, 08/02/2002; pp 787-792; American Association for the Advancement of Science, Washington, DC; US	
		BAUGHMAN, R.H. et al., "Carbon Nanotube Actuators"; Science 284, 05/21/1999; pp 1340 -1344; American Association for the Advancement of Science, Washington, DC; US	

Examiner
Signature

Date
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached. This citation of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to be used by the USPTO for processing an application. Confidentiality is governed by 35 U.S.C. 422 and 37 CFR 1.14. This citation is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Substitute for form 1449-PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known

Application Number	10/591,730
Filing Date	February 26, 2007
First Named Inventor	Dong-Seok Suh
Art Unit	1724
Examiner Name	Arun S. Phasge
Attorney Docket Number	21724-003US1

Sheet 4 of 12

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
		BAUGHMAN, R.H., "Conducting Polymer Artificial Muscles"; Synthetic Metals 78, no month, 1996, pp 339-353; Elsevier Science B.V.; Amsterdam, The Netherlands	
		BOWER, C. et al., "Plasma-induced alignment of carbon nanotubes"; Applied Physics Letters, Vol. 77, No. 6; 08/07/2000; pp. 830-832; American Institute of Physics; US	
		BOZKURT, A. et al., "Proton-conducting polymer elec-trolytes based on phosphoric acid; Solid State Ionics 125, no month, 1999; pp 225-233; Elsevier Science B.V.; Amsterdam, The Netherlands	
		BURGMAYER, et al., "Ion Gate Electrodes, Polypyrrole as a Switchable Ion Conductor Membrane"; Journal of Physical Chemistry, Vol. 88, 06/1984; pp 2515-2521; American Chemical Society; US	
		CAMPBELL, J.K. et al., "Electrochemistry Using Single Carbon Nanotubes"; J. Am. Chem. Soc.; Vol. 121(15); 04/02/1999; pp 3779-3780; American Chemical Society	
		CASSELL, A.M. et al., "Combinatorial chips for optimiz-ing the growth and integration of carbon nanofiber based devices"; Nanotechnology B15, 11/10/2003; pp 9-15; Institute of Physics Publishing; IOP Publishing Ltd.; UK	
		CASSELL, A.M. et al., "Combinatorial Optimization of Heterogeneous Catalysts Used in the Growth of Carbon Nanotubes"; Langmuir 17; 11/18/2000; pp 260-264; American Chemical Society	
		CHE, G. et al., "Carbon Nanotube Membranes for Elec-trochemical Energy Storage and Production"; Nature 393; May 28, 1998; pp 346-349; Nature Publishing Group, Macmillan Publishers Ltd; US	
		CHOI, Y.S. et al. "An under-gate triode structure field emission display with carbon nanotube emitters"; Di-iamond and Related Materials 10; pp 1705-1708; no month, 2001; Elsevier Science B.V.; Amsterdam, The Netherlands	
		COLLINS, P. et al., "Engineering Carbon Nanotubes and Nanotube Circuits Using Electrical Breakdown"; Science 292, pp 706-709, April 27, 2001; American Association for the Advancement of Science, Washington, DC; US	

Examiner Signature	Date Considered
--------------------	-----------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is provided by 35 U.S.C. 422 and 37 CFR 1.14. This collection is intended to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1448/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if Known

Application Number	10/591,730
Filing Date	February 26, 2007
First Named Inventor	Dong-Seok Suh
Art Unit	1724
Examiner Name	Arun S. Phasge
Attorney Docket Number	21724-003US1

Sheet 5 of 12

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
		DAI, Hongjie; "Carbon Nanotubes: Synthesis, Integration, and Properties" Accounts Chemical Research 35, pp 1035-1044; August 7, 2002; American Chemical Society, US	
		DUAN, et al, "General Synthesis of Compound Semiconductor Nanowires"; Advanced Materials Vol. 12, No. 4; pp 298-302; no month, 2000WILEY-VCH Verlag GmbH; DE	
		DUESBERG, G.S. et al., "Growth of Isolated Carbon Nanotubes with Lithographically Defined Diameter and Location"; Nano Letters Vol. 3, No. 2; pp 257-259; January 25, 2003; American Chemical Society, US	
		EKIMOV, E.A. et al., "Superconductivity in Diamond"; Nature, Vol. 428,, pp 542-545; April 1, 2004; Nature Publishing Group; Macmillan Publishers Ltd.; US	
		ERLEBACKER, J. et al., "Evolution of nanoporosity in Dealloying"; Nature, Vol. 410, pp 450-453; March 22, 2001; Nature Publishing Group; Macmillan Publishers Ltd.; US	
		FAN, S. et al., "Self-Oriented Regular Arrays of Carbon Nanotubes and Their Field Emission Properties"; Science, Vol. 283, pp 512-514; January 22, 1999; American Association for the Advancement of Science; US	
		FIEBIG, M., et al., "Visualization of the Local Insulator-Metal Transition in Pr _{0.7} Ca _{0.3} MnO ₃ "; Science, Vol. 280 pp 1925-1928; June 19, 1998; American Association for the Advancement of Science; US	
		GANGLOFF, L. et al., "Self-Aligned, Gated Arrays of Individual Nanotube and Nanowire Emitters"; Nano Letters, Vol. 4, pp 1575-1579; July 29, 2004; American Chemical Society; US	
		GATES et al., "A Solution-Phase Approach to the Synthesis of Uniform Nanowires of Crystalline Selenium with Lateral Dimensions in the Range of 10-30 nm"; J. Am. Chem. Soc. 122, pp 12582-12583, December 1, 2000, American Chemical Society; US	
		GOFFER, Y. et al., "An all-polymer charge storage device"; Applied Physics Letters 71, pp 1582-1584; September 15, 1997; American Institute of Physics; US	

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to be used by the USPTO for processing an application. Confidentiality is provided by 35 U.S.C. 422 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1448/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if Known

Application Number	10/591,730
Filing Date	February 26, 2007
First Named Inventor	Dong-Seok Suh
Art Unit	1724
Examiner Name	Arun S. Phasge
Attorney Docket Number	21724-003US1

Sheet 6 of 12

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
		GOLDBERGER, J. et al.; "Single-crystal gallium nitride nanotubes"; Nature Vol 422, pp 599-602; April 10, 2003; Nature Publishing Group; Macmillan Publishers Ltd.; US	
		GU, G. et al.; "V[sub]2O[sub]5 nanofibre sheet actuators"; Nature Materials Vol. 2, pp 316-319; April 20, 2003; Nature Publishing Group; Macmillan Publishers Ltd.; US	
		HADDON, R.C. et al.; "Purification and Separation of Carbon Nanotubes"; MRS Bulletin Vol. 29, pp 252-259; April 2004; Material Research Society; US	
		HAFNER, J.H. et al.; "Growth of nanotubes for probe microscopy tips"; Nature Vol. 398, pp 761-762; April 29, 1999; Nature Publishing Group; Macmillan Publishers Ltd.; US	
		HAFNER, J.H. et al.; "High-Yield Assembly of Individual Single-Walled Carbon Nanotube Tips for Scanning Probe Microscopies"; Journal of Physical Chem. Vol. 105, No. 4, pp 743-746; February 1, 2001; American Chemical Society; US	
		HSIOU, Y.F. et al.; "Controlled placement and electrical contact properties of individual multi-walled carbon nanotubes on patterned silicon chips"; Applied Physics Letters Vol. 84, No. 6, pp 984-986; American Institute of Physics; US	
		HUANG, M.H. et al.; "Room-Temperature Ultraviolet Nanowire Nanolasers"; Science 292, pp 1897-1899; June 8, 2001; American Association for the Advancement of Science; US	
		HUANG, S. et al.; "Growth of Millimeter-Long and Horizontally Aligned Single-Walled Carbon Nanotubes on Flat Substrates"; J. Am. Chem. Soc. Vol. 125, pp 5636; April 22, 2003; American Chemical Society; US	
		JAVEY, A. et al.; "Carbon Nanotube Transistor Arrays for Multistage Complimentary Logic and Ring Oscillators"; Nano Letters, Vol. 2 No. 9; pp 929-932; July 31, 2002; American Chemical Society; US	
		JÖRISAN, L. et al.; "New membranes for direct methanol fuel cells"; J. Power Sources Vol. 105, pp. 267-273; Elsevier Science B.V.; NL	

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to be used by the USPTO for processing an application. Confidentiality is provided by 35 U.S.C. 422 and 37 CFR 1.14. This collection is intended to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if Known

Application Number	10/591,730
Filing Date	February 26, 2007
First Named Inventor	Dong-Seok Suh
Art Unit	1724
Examiner Name	Arun S. Phasge
Attorney Docket Number	21724-003/US1

Sheet 7 of 12

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
		KAMEOKA, J. et al. "A scanning tip electrospinning source for deposition of oriented nanofibres"; Nanotech-nology 14, pp 1124-1129; September 5, 2003; Institute of Physics Publishing; UK	
		KIM, P. et al., "Thermal Transport Measurements of Individual Multiwalled Nanotubes"; Phys. Rev. Letters Vol. 87, Number 21; pp 215502-1 to 215502-4; November 19, 2001; The American Physical Society; US	
		KIRYUKHIN, V. et al., "An X-ray-induced insulator-metal transition in a magnetoresistive manganite"; Nature Vol. 386, pp 813-815; April 24, 1997; Nature Publishing Group, Macmillan Publishers Ltd. US	
		KRÜGER, M. "Electrochemical carbon nanotube field-effect transistor"; Applied Physics Letters Vol. 78, No. 9; pp 1291-1293; February 26, 2001; American Institute of Physics; US	
		KRUPKE, R. et al., "Simultaneous Deposition of Metallic Bundles of Single-walled Carbon Nanotubes Using Aodielectrophoreses"; Nano Letters Vol. 3, No. 8 pp 1019-1023; July 9, 2003; American Chemical Society; US	
		LI, B. et al.; "Raman spectral study of silicon nanowires"; Physical Review B; Vol. 59, No. 3; pp 645-1648; January 15, 1999; the American Physical Society; US	
		LI, J. et al., "Novel Three-Dimensional Electrodes: Electrochemical Properties of Carbon Nanotube Ensembles" J. Phys. Chem. B. 106; pp 9299-9305; August 16, 2002; American Chemical Society; US	
		LI, W. et al.; "Preparation and Characterization of Multi-walled Carbon Nanotube-Supported Platinum for Cathodic Catalysts of Direct Methanol Fuel Cells"; J. Phys. Chem. B 107; pp. 6292-6299; June 6, 2003; American Chemical Society; US	
		LI, Y. et al.; "Bismuth Nanotubes: A Rational Low-Temperature Synthetic Route"; J. Am. Chem. Soc. 123; pp 9904-9905; September 14, 2001; American Chemical Society; US	
		LIN, C.L. et al., "Proton-induced hole-doping effect in (Y _{sub} 0.5Ca _{sub} 0.5)Ba _{sub} 2Cu _{sub} 3O _{sub}) ^x films"; Applied Physics Letters 71, pp 3284-3286; December 1, 1997; American Institute of Physics; US	

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to be used by the USPTO for processing an application. Confidentiality is governed by 35 U.S.C. 422 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 144B/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if Known

Application Number	10/591,730
Filing Date	February 26, 2007
First Named Inventor	Dong-Seok Suh
Art Unit	1724
Examiner Name	Arun S. Phasge
Attorney Docket Number	21724-003US1

Sheet 8 of 12

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
		BRABEC, C. et al., editors: "Organic Photovoltaics: Concepts and Realization"; Springer Series in Materials Science Vol. 60, no month, 2003; Springer-Verlag; DE	
		DELZEIT, L. et al., "Growth of multiwall carbon nano-tubes in an inductively coupled plasma reactor"; J. Appl. Letters, Volume 91, No. 9; May 1, 2001; pp 6027-6033; American Institute of Physics; US	
		DING, R.G. et al., "Nanofabrication of Organic/Inorganic Hybrids of TiO ₂ /sub12 with Substituted Phthalocyanines or Polythiophene"; (abstract only); Journal of Nanoscience and Nanotechnology 1; No. 2, pp 207-213; June 2001; American Scientific Publishers; US	
		HAN, J.-H., "Growth characteristics of carbon nanotubes using platinum catalyst by plasma enhanced chemical vapor deposition"; (abstract only); Diamond and Related Materials, Vol. 12, pp 878-883; July 2003; Elsevier Science B.V.; NL	
		KINARET, J.M., et al.; "A carbon-nanotube-based nano-relay"; Applied Physics Letters; Vol 82, No. 8; February 24, 2003; pp 1287-1289; American Institute of Physics; US	
		LIU, J. et al., "Recent Advances in Methods of Forming Carbon Nanotubes"; MRS Bulletin 29, pp 244-250; April, 2004; Material Research Society; US	
		LIU, J. et al.; "Fullerene Pipes"; Science Vol. 280, pp 1253-1256; May 22, 1998; American Association for the Advancement of Science, Washington, DC; US	
		LIU, S.Q. et al.; "Electric-pulse-induced reversible resistance change effect in magnetoresistive films"; Appl. Phys. Lett. Vol. 76, No. 19; pp 2749-2751; May 8, 2000; American Institute of Physics; US	
		LOO, C.L. et al.; "Nanoshell-enables Photonics-Based Imaging and Therapy of Cancer"; Technology in Cancer Research & Treatment Vol 3, No. 1, pp 33-40; February 2004; Adenine Press; US	
		MANNHART, J. et al.; "Large electric field effects in YBa ₂ Cu ₃ O _{7-x} films containing weak links"; Applied Physics Letters 62, pp 630-633; February 8, 1993; American Institute of Physics; US	

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.96. The information is required to obtain or retain a benefit by the public which is to be used by the USPTO for processing an application. Confidentiality is provided by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1448-PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if Known

Application Number	10/591,730
Filing Date	February 26, 2007
First Named Inventor	Dong-Seok Suh
Art Unit	1724
Examiner Name	Arun S. Phasge
Attorney Docket Number	21724-003US1

Sheet 9 of 12

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
		MAYER, B.T. et al.; "Sonochemical Synthesis of Trigon-al Selenium Nanowires"; Chemistry of Materials 15; pp 3852-3858; August 19, 2003; American Chemical Society; US	
		MICKELSON, et al.; "Packing C60 in Boron Nitride Nanotubes"; Science 300, pp 467-469; April 18, 2003; American Association for the Advancement of Science, Washington, DC; US	
		MILLIS, A.J., "Lattice effects in magnetoresistive manganese perovskites"; Nature Vol. 392, pp 147-151; March 12, 1998; Nature Publishing Group; Macmillan Publishers Ltd.; US	
		MISEWICH, J.A. et al.; "Electrically Induced Optical Emission from a Carbon Nanotube FET"; Science Vol. 301, pp 783-786; May 2, 2003; American Association for the Advancement of Science, Washington, DC; US	
		MIYANO, K., et al.; "Photoinduced Insulator-to-Metal Transition in a Perovskite Manganite"; Phys. Rev. Letters, Vol. 78, No. 22; pp 4257-4260; June 2, 1997; American Physical Society; US	
		MOHANAN, J.L. et al.; "Porous Semiconductor Chalco-genide Aerogels"; Science Vol. 307, 397-399; January 21, 2005; American Association for the Advancement of Science, Washington, DC; US	
		MORIMOTO, Y. et al.; "Pressure effects on charge-ordering transitions in Perovskite manganites"; Physical Review B, Volume 55, No. 12; March 15, 1997; The American Physical Society; US	
		MORATTI, S.; "The Chemistry of Uses of polyphenylene-vinylenes"; Handbook of Conducting Polymers; 2nd Ed., Chapter 13; pp 343-361; Marcel Dekker, New York, 1998	
		NIU, C. et al.; "High power electrochemical capacitors based on carbon nanotube electrodes"; Appl. Phys. Letters, Vol. 70; pp1480-1482; March 17, 1997; American Institute of Physics; US	
		NORBY, T. "Solid-state protonic conductors: principles, properties, progress and prospects"; Solid State Ionics 125, pp 1-11; no month, 1999; Elsevier Science B.V.; Amsterdam, The Netherlands	

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is provided by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 144B/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if Known

Application Number	10/591,730
Filing Date	February 26, 2007
First Named Inventor	Dong-Seok Suh
Art Unit	1724
Examiner Name	Arun S. Phasge
Attorney Docket Number	21724-003US1

Sheet 10

of

12

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
		RAJESH, B. et al.; "Pt-WO3 supported on carbon nano-tubes as possible anodes for direct methanol fuel cells"; Fuel 81, pp 2177-2190; July 9, 2002; Elsevier Science B.V.; Amsterdam, The Netherlands	
		RENEKER, D.H. et al.; "Nanometre diameter fibres of polymer, produced by electrospinning"; Nanotechnology 7, pp 216-223; no month, 1996; IOP Publishing; UK	
		RINZLER, A.G. et al.; "Large-scale purification of single-wall carbon nanotubes: process, product, and characterization"; Appl. Phys. A 67, pp 29-37; no month, 1998; Springer-Verlag; DE	
		SAKAI, J. et al.; "Switching effect perpendicular to the plane of Pr _{0.5} Ca _{0.5} MnO _{3-y} thin films"; J. Appl. Phys. Vol. 90, No. 3; pp 1410-1413; August 1, 2001; American Institute of Physics; US	
		SALIGER, et al.; "High surface area carbon aerogels for supercapacitors"; Journal of Non-Crystalline Solids 225, pp 81-85; no month 1998; Elsevier Science B.V.; Amsterdam, The Netherlands	
		SCHINOHARA, H. et al.; "Electrically Stimulated Release of Neurotransmitter from a Conducting Polymer Thin Film on the Model of a Synapse"; Chemistry Letters, pp 179-182; no month, 1985; The Chemical Society of Japan; JP	
		SCHLÜTER, A.; "Synthesis of Poly(para-phenylene)s"; Handbook of Conducting Polymers; 2nd Ed.; Chapter 8; pp 209-224; Marcel Dekker, New York, 1998	
		SHIRAKAWA, H.; "Synthesis of Polyacetylene"; Handbook of Conducting Polymers; 2nd Ed., Chapter 7; pp 198-207; Marcel Dekker, New York, 1998	
		SLOAN, J. et al.; "Crystallisation inside fullerene related structures"; J. Materials Chemistry 7, pp 1089-1095; no month, 1997; Royal Society of Chemistry; London, GB	
		SOUNDARRAJAN, P. et al.; "Surface modification of aligned carbon nanotube arrays for electrochemical sensing applications"; in J. Vac. Sci. Technology A 21, pp 1198-1201, July/Aug 2003; American Vacuum Society; US	

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to be used by the USPTO to process an application. Confidentiality is provided by 38 U.S.C. 122 and 37 CFR 1.14. This collection is intended to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known

Application Number	10/591,730
Filing Date	February 26, 2007
First Named Inventor	Dong-Seok Suh
Art Unit	1724
Examiner Name	Arun S. Phasge
Attorney Docket Number	21724-003US1

Sheet 11 of 12

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
		STROLL, M. et al.; "Electrochemical and Raman mea-surements on single-walled carbon nanotubes"; Chemical Physics Letters 375; pp 625-631; no month, 2003; Elsevier Science B.V.; Amsterdam, The Netherlands	
		SUN, X. et al.; "Composite electrodes made of Pt nano-particles deposited on carbon nanotubes grown on fuel cell backings"; Chemical Physics Letters 379; pp 99-104; no month, 2003; Elsevier Science B.V.; Amsterdam, The Netherlands	
		TOMIOKA, Y. et al.; "Magnetic-field-induced metal-insulator phenomena in Pr _{1-x} Ca _x MnO ₃ with controlled charge ordering instability"; Phys. Rev. B Vol. 53, No. 4; pp R1689-R1692; January 15, 1996; American Physical Society; US	
		TSIAKARIS, P.E. et al.; "The oxidation of ethanol over Pt catalyst-electrodes deposited on ZrO ₂ /SiO ₂ "; abstract only; Solid State Ionics 152-153, 721-726 (2002) Elsevier Science B.V.; Amsterdam, The Netherlands	
		VELEV, O.D. et al.; "A class of porous metallic nano-structures"; Nature Vol. 401, p 548; October 7, 1999; Nature Publishing Group; Macmillan Publishers Ltd.; US	
		VRBANIĆ, D. et al.; "Air-stable Monodispersed Mo ₆ S ₃ I ₆ nanowires"; Nanotechnology 15, pp 635-638; no month, 2004; Institute of Physics Publishing; US	
		WALTERS, D.A. et al.; "Elastic strain of freely suspended single-wall carbon nanotube ropes"; Applied Physics Letters Vol. 74 No. 25; pp3803-3805; June 21, 1999; American Institute of Physics; US	
		WANG, C. et al.; "Proton Exchange Membrane Fuel Cells with Carbon Nanotube Based Electrodes"; Nano Letters Vol. 4, No. 2; pp 345-348; December 30, 1999; American Chemical Society; US	
		WANG, J et al.; "Morphological Effectson the Electrical and Electrochemical Properties of Carbon Aerogels"; Journal of the Electrochemical Society 148, pp D75-D77; no month, 2001; The Electrochemical Society, Inc.; US	
		WEISSMULLER, J. et al. in Science 300, pp 312-315; April 11, 2003; American Association for the Advance-ment of Science, Washington, DC; US	

Examiner Signature

Date Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conference with MPEP 609. Draw line through citation if not in conference and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to be used by the USPTO for processing an application. Confidentiality is provided by 39 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known

Application Number 10/591,730
Filing Date February 26, 2007
First Named Inventor Dong-Seok Suh
Art Unit 1724
Examiner Name Arun S. Phasge
Attorney Docket Number 21724-003US1

Sheet 12 of 12

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
		WU, Y. et al.; "Single Crystalline Nanowires of Lead Can Be Synthesized through Thermal Decomposition of Lead Acetate in Ethylene Glycol"; Nano Letters Vol. 3, No. 8; pp 1163-1166; June 26, 2003; American Chemical Society; US	
		WU, Y. et al.; "Superconducting MgB2 Nanowires"; Ad-vanced Materials 13, No. 19; pp 1487-1489; October 2, 2001; Wiley-VCH, Verlag GmbH & Co. KgaA, Wein-heim, Germany	
		XI, X. et al.; "Electric field effect in high Tc supercon-ducting ultrathin YBa2Cu3O7-x films"; Applied Physics Letters 59 (26); pp 3470-3472; December 23, 1991; American Institute of Physics; US	
		XU, L. et al.; "Synthesis and Magnetic Behavior of Peri-odic Nickel Sphere Arrays"; Advanced Materials 15, pp. 1562-1564; September 2003; Wiley-VCH, Verlag GmbH & Co. KgaA; DE	
		XU, L. et al.; "Metal Sphere Photonic Crystals by Nano-molding"; J. Am. Chem. Soc. 123, pp 763-764; January 9, 2001; American Chemical Society; US	
		YU, G. et al.; "Polymer Photovoltaic Cells: enhanced Efficiencies via a Network on Internal Donor-Acceptor Heterojunctions"; Science 270, pp 1789-1791; December 15, 1995; American Association for the Advancement of Science, Washington, DC; US	
		YU, J.-S. et al.; "Fabrication of Ordered Uniform Porous Carbon Networks and Their Application to a Catalyst Supporter"; J. Am. Chem. Society 124, pp 9382-9383; July 19, 2002; American Chemical Society; US	
		ZAKHIDOV, A. et al.; "Carbon Structures with Three-Dimensional Periodicity at Optical Wavelengths"; Science 282; pp 897-901; October 30, 1998; American Association for the Advancement of Science, Washng-ton, DC; US	
		ZHANG, S.S. et al.; "A Novel Electrolyte Solvent for Rechargeable Lithium and Lithium-Ion Batteries"; J. Electrochemical Society, Vol. 143, No. 12; pp 4047-4053; December 1996; The Electrochemical Society, Inc.; US	
		ZHANG, Y. et al.; "Electric-field-directed growth of aligned single-walled carbon nanotubes"; Applied Physics Letters 79, 3155-3157; November 5, 2001; American Institute of Physics; US	

Examiner Signature	Date Considered
--------------------	-----------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.96. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is provided by 35 U.S.C. 422 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.